



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

PHILOSOPHICAL
TRANSACTIONS,
OF THE
ROYAL SOCIETY
OF
LONDON.

FOR THE YEAR MDCCXCV.

PART I.

LONDON,

SOLD BY PETER ELMSLY,
PRINTER TO THE ROYAL SOCIETY.
MDCCXCV.

ADVERTISEMENT.

THE Committee appointed by the *Royal Society* to direct the publication of the *Philosophical Transactions*, take this opportunity to acquaint the Public, that it fully appears, as well from the council-books and journals of the Society, as from repeated declarations which have been made in several former *Transactions*, that the printing of them was always, from time to time, the single act of the respective Secretaries, till the Forty-seventh Volume: the Society, as a Body, never interesting themselves any further in their publication, than by occasionally recommending the revival of them to some of their Secretaries, when, from the particular circumstances of their affairs, the *Transactions* had happened for any length of time to be intermitted. And this seems principally to have been done with a view to satisfy the Public, that their usual meetings were then continued, for the improvement of knowledge, and benefit of mankind, the great ends of their first institution by the Royal Charters, and which they have ever since steadily pursued.

But the Society being of late years greatly enlarged, and their communications more numerous, it was thought advisable, that a Committee of their members should be appointed to reconsider the papers read before them, and select out of them such as they should judge most proper for publication in the future *Transactions*; which was accordingly done upon the 26th of March, 1752. And the grounds

of their choice are, and will continue to be, the importance and singularity of the subjects, or the advantageous manner of treating them; without pretending to answer for the certainty of the facts, or propriety of the reasonings, contained in the several papers so published, which must still rest on the credit or judgment of their respective authors.

It is likewise necessary on this occasion to remark, that it is an established rule of the Society, to which they will always adhere, never to give their opinion, as a Body, upon any subject, either of Nature or Art, that comes before them. And therefore the thanks, which are frequently proposed from the Chair to be given to the authors of such papers as are read at their accustomed meetings, or to the persons through whose hands they receive them, are to be considered in no other light than as a matter of civility, in return for the respect shewn to the Society by those communications. The like also is to be said with regard to the several projects, inventions, and curiosities of various kinds, which are often exhibited to the Society; the authors whereof, or those who exhibit them, frequently take the liberty to report, and even to certify in the public news-papers, that they have met with the highest applause and approbation. And therefore it is hoped, that no regard will hereafter be paid to such reports, and public notices; which in some instances have been too lightly credited, to the dishonour of the Society.

CONTENTS.

- I. *THE Croonian Lecture on Muscular Motion.* By Everard Home, Esq. F. R. S. page 1
- II. *The Bakerian Lecture. Observations on the Theory of the Motion and Resistance of Fluids; with a Description of the Construction of Experiments, in order to obtain some fundamental Principles.* By the Rev. Samuel Vince, A. M. F. R. S. p. 24
- III. *On the Nature and Construction of the Sun and fixed Stars.* By WILLIAM HERSCHEL, LL.D. F. R. S. p. 46
- IV. *An Account of the late Eruption of Mount Vesuvius. In a Letter from the Right Honourable Sir William Hamilton, K. B. F. R. S. to Sir Joseph Banks, Bart. P. R. S.* p. 73
- V. *New Observations in further Proof of the mountainous Inequalities, Rotation, Atmosphere, and Twilight, of the Planet Venus.* By John Jerome Schroeter, Esq. Communicated by George Best, Esq. F. R. S. p. 117
- VI. *Experiments on the Nerves, particularly on their Reproduction; and on the Spinal Marrow of living Animals.* By William Cruikshank, Esq. Communicated by the late John Hunter, Esq. F. R. S. p. 177
- VII. *An experimental Inquiry concerning the Reproduction of*

Nerves. By John Haighton, M. D. Communicated by Maxwell Garthshore, M. D. F. R. S. p. 190

VIII. *The Croonian Lecture on Muscular Motion.* By Everard Home, Esq. F. R. S. p. 202

APPENDIX.

Meteorological Journal kept at the Apartments of the Royal Society, by Order of the President and Council.

THE PRESIDENT and COUNCIL of the ROYAL SOCIETY adjudged,
for the year 1794, the Medal on Sir GODFREY COPLEY's Donation,
to Sig. ALESSANDRO VOLTA, Professor of Experimental Philosophy in
the University of Pavia, for his several communications explanatory
of certain Experiments published by Professor Galvani.

PHILOSOPHICAL
TRANSACTIONS,
OF THE
ROYAL SOCIETY
OF
LONDON.

FOR THE YEAR MDCCXCV.

PART II.

LONDON,

SOLD BY PETER ELMSLY,
PRINTER TO THE ROYAL SOCIETY.
MDCCXCV.

CONTENTS.

- IX. *SOME Observations on the Mode of Generation of the Kangaroo, with a particular Description of the Organs themselves.* By Everard Home, Esq. F. R. S. p. 221
- X. *On the Conversion of Animal Substances into a fatty Matter much resembling Spermaceti.* By George Smith Gibbes, B. A. Communicated by George Shaw, M. D. F. R. S. p. 239
- XI. *Observations on the Influence which incites the Muscles of Animals to contract in Mr. Galvani's Experiments.* By William Charles Wells, M. D. F. R. S. p. 246
- XII. *Observations on the Structure of the Eyes of Birds.* By Mr. Pierce Smith, Student of Physic. Communicated by George Pearson, M. D. F. R. S. p. 263
- XIII. *Observations on the best Methods of producing artificial Cold.* By Mr. Richard Walker. Communicated by Martin Wall, M. D. F. R. S. p. 270
- XIV. *Observations on the Grafting of Trees. In a Letter from Thomas Andrew Knight, Esq. to Sir Joseph Banks, Bart. P. R. S.* p. 290
- XV. *On Welding Cast Steel.* By Sir Thomas Frankland, Bart. F. R. S. p. 296
- XVI. *The Binomial Theorem demonstrated by the Principles of Multiplication.* By the Rev. Abram Robertson, A. M. of Christ Church, Oxford, F. R. S. In a Letter to the Rev. Dr. Maskelyne, F. R. S. and Astronomer Royal. p. 298

- XVII. *Experiments and Observations to investigate the Nature of a Kind of Steel, manufactured at Bombay, and there called Wootz : with Remarks on the Properties and Composition of the different States of Iron.* By George Pearson, M. D. F. R. S. p. 322
- XVIII. *Description of a Forty-feet Reflecting Telescope.* By William Herschel, LL.D. F. R. S. p. 347
- XIX. *Abstract of a Register of the Barometer, Thermometer, and Rain, at Lyndon, in Rutland, 1794.* By Thomas Barker, Esq. Communicated by Thomas White, Esq. F. R. S. p. 410
- XX. *An Account of the Trigonometrical Survey carried on in the Years 1791, 1792, 1793, and 1794, by Order of his Grace the Duke of Richmond, late Master General of the Ordnance.* By Lieut. Col. Edward Williams, and Capt. William Mudge, of the Royal Artillery ; and Mr. Isaac Dalby. Communicated by the Duke of Richmond, F. R. S. p. 414
- Presents received by the Royal Society from November, 1794, to June, 1795.* p. 593
- Index.* p. 597